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Goal Orientations and Beliefs About the Causes of Sport Success Among Elite Skiers

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The purposes of this study were to determine the relationship between goal orientations and beliefs about the causes of success among elite athletes and to examine the psychometric characteristics of the Task and Ego Orientation in Sport Questionnaire (TEOSQ) in high-level competitive sport. Male and female intercollegiate skiers ($N=143$) completed the TEOSQ specific to skiing and a questionnaire assessing their perceptions of the determinants of success in skiing. Factor analysis of the TEOSQ revealed two independent subscales that demonstrated acceptable internal consistency. Task orientation was positively linked with the beliefs that skiing success is a result of hard work, superior ability, and selecting activities that one can perform successfully, and ego orientation to the beliefs that taking an illegal advantage, possessing high ability, selecting tasks that one can accomplish, and external variables are reasons for skiing success. Factor analysis of the two goal orientation and four belief scale scores revealed two divergent goal/belief dimensions in competitive skiing.

Variation in motivation among athletic participants has been an area of interest for study because of its potential application for sport psychology services (Mahoney, Gabriel, & Perkins, 1987). Coaches, athletes, and sport psychologists would like to gain insight into the causes of and remedies for performance impairment, reduced effort, and/or a lack of persistence among sport competitors.

Since the advent of a cognitive perspective in sport psychology (Straub & Williams, 1984), it has been presumed that variations in motivated behavior are a function of how athletes interpret their sport experience. The assumption that cognitions mediate behavior has laid the theoretical foundation for a preponderance of sport psychology research over the past 15 years (Roberts, 1984, 1992).

One contemporary, cognitively based approach to the study of motivation is based on the goal perspective theories of motivated behavior (Ames, 1984, 1992; Dweck & Leggett, 1988; Elliott & Dweck, 1988; Nicholls, 1984, 1989,

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1992). These theories propose that two major goal perspectives operate in achievement-related contexts such as sport that relate to how people define success and judge their level of competence. The first goal perspective, task involvement, entails that perceptions of high ability and subjective success are based on the experience of learning, personal improvement, and task mastery. The second goal perspective, ego involvement, means that feelings of personal achievement and high competence are normatively referenced. In this case, subjective success stems from the perception that one has defeated others and/or demonstrated superior ability.

Whether one is in a state of task or ego involvement is a function of dispositional preferences for task- versus ego-involved goals (i.e., one's degree of task and ego orientation) and situational influences. Contemporary goal perspective theories assume that individual differences in task and ego orientation lay the basis for cognitive and emotional responses and the interpretations of achievement-related events. Specifically, it is held that goal orientations mediate one's sense of competence and subsequent behavior. Moreover, dispositional goal perspectives are assumed to act as a major organizing principle that impacts individuals' understanding of what an achievement activity is about and how it works.

The Task and Ego Orientation in Sport Questionnaire (TEOSQ) was developed to assess people's proneness for task and ego involvement in the athletic context (Duda, 1989b, 1992). The premise that individuals can hold different orientations to achievement and focus on differential goals in sport (and that such differences can be measured) is not unique. For example, Vealey (1986) developed the Competitive Orientation Inventory (COI) to assess individual differences in the tendency to focus on playing well versus winning in sport. Gill and Deeter's (1988) Sport Orientation Questionnaire (SOQ) measures individual differences in sport achievement orientation or a person's degree of competitiveness, win orientation, and goal orientation. There are important conceptual distinctions, however, between these three instruments. The constructs of task and ego orientation, as assessed by the TEOSQ, are not equivalent to the individual differences determined by the COI or the SOQ (see Duda, 1992, for a discussion of this issue).

Recent research has supported the relevance of differences in goal orientations to the investigation of behavioral variation in athletic settings (for a review, see Duda, 1989a, 1992, in press; Roberts, 1984). Further, studies have found that individual differences in goal perspectives predict overall views about sport. For example, goal orientations have been found to relate to attitudes toward sportsmanship and aggression (Duda, Olson, & Templin, 1991; Huston & Duda, 1992; Stephens, Bredemeier, Shields, & Ryan, 1992) as well as to perceptions of the wider purposes of sport involvement (Duda, 1989b).

Nicholls (1989) has argued that an individual's goal orientation also corresponds to fundamental beliefs about how achievement activities operate. Specifically, classroom-based research has demonstrated that there are logically consistent relationships between differences in goal perspectives in the academic environment and beliefs about what causes success in school (Nicholls, Cheung, Lauer, & Patashnick, 1989; Nicholls, Cobb, Wood, Yackel, & Patashnick, 1990; Nicholls, Patashnick, & Nolen, 1985; Thorkildsen, 1988). Within the educational domain, a task orientation is coupled with the view that academic achievement stems from exerting effort, trying to understand rather than memorize, and work-

ing cooperatively with others. In contrast, an ego orientation is linked with the belief that intelligence and superior academic ability lead to success in the classroom. In Nicholls' (1989) view, these diverse goal/belief relationships reflect individual differences in students' theories about school and have important motivational implications for classroom achievement.

Duda and Nicholls (1992) examined whether the same goal/belief dimensions would emerge in the sport context. Among a sample of high school athletes and nonathletes, an interdependence between goal orientations and beliefs about achievement was found that paralleled previous classroom-based findings. Recently, the results of that study have been replicated in research on children and adolescents from the United States and Britain (Duda, Fox, Biddle, & Armstrong, 1992; Hom, Duda, & Miller, 1992; Newton & Duda, 1992).

To date, no studies have examined whether the concepts of task and ego orientation have utility at the elite sport level. Moreover, past work has examined neither elite athletes' views concerning the causes of athletic success nor the correspondence between these views and their goal orientation. Consequently, the purpose of the present study was twofold: first, to examine the psychometric characteristics of the TEOSQ in the context of elite competitive sport, and second, to determine whether similar dimensions of goal orientations and beliefs would emerge among elite athletes as were found in previous work in academic and nonelite interscholastic sport settings.

Method

Subjects

Male ($n=81$) and female ($n=62$) intercollegiate skiers from the northeastern United States volunteered to participate. All subjects had competed at some time in an NCAA National Ski Championship competition in either Nordic ($n=68$) or Alpine ($n=75$) events. The mean age of the skiers was 21.4 ($SD=.6$ years) and their average years of experience in the sport was 11.06 ($SD=9.1$ years).

Measures

Goal orientation was assessed by administering the Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda, 1989b, 1992). The TEOSQ asks subjects to think of when they felt most successful in sport (in this case, skiing) and then indicate their degree of agreement with 13 items reflecting a task and ego orientation to subjective success. Three of the items were slightly reworded to be more pertinent to skiing. Responses were recorded on a 5-point Likert-type scale from *strongly agree* (1) to *strongly disagree* (5). The TEOSQ is scored by calculating a mean scale score (i.e., the sum of the scores divided by the number of items) for each of the two subscales. Consequently, the range for a subject's degree of task and ego orientation in skiing was from 1 (low) to 5 (high).

To determine the subjects' beliefs about success, each athlete indicated his or her degree of agreement with 21 items reflecting perceived causes of success in skiing. This questionnaire was an adaptation of measures developed by Nicholls and his colleagues in recent classroom (Nicholls et al., 1985, 1989) and sport (Duda & Nicholls, 1992) research. Specifically, subjects were asked to respond to the question "What do you think is most likely to help athletes do well or

succeed in competitive skiing?" Responses were registered on a 5-point Likert-type scale from *strongly disagree* (1) to *strongly agree* (5).

Procedures

The skiers completed an informed consent, the TEOSQ, and the questionnaire on beliefs about the causes of skiing success in a group setting. Responses to all instruments were anonymous. No problems were encountered in understanding the questions or completing the inventories.

Results

Validity and Reliability of the TEOSQ

Because the present research entailed the initial use of the TEOSQ among elite athletes, the factor structure of the instrument was examined (via principal-components analysis with both varimax and oblique rotations). As can be seen in Table 1, a task and ego orientation factor emerged. Consistent with previous work (e.g., Duda, 1989b; Duda et al., 1991; Duda et al., in press; Stephens & Brede-meier, 1992), the task and ego orientation subscales were found to be independent ($r=.05$, $p<.05$). Consequently, only the results of the factor analysis with an orthogonal rotation are presented (see Table 1).

The internal reliability of the task and ego orientation subscales was deter-

Table 1
Factor Analysis (varimax rotation)
of the Task and Ego Orientation in Sport Questionnaire

	Task orientation	Ego orientation
<i>I feel most successful in skiing when . . .</i>		
I learn a new aspect of technique and it makes me want to practice more	.643	-.095
I learn something that is fun to do	.564	.104
I learn a new skill or technique by trying hard	.770	.145
I work really hard	.705	-.003
Something I learn makes me want to go and practice more	.805	-.152
A skill I learn really feels right	.717	.281
I do my very best	.427	-.131
I'm the only one who can do a particular skill	.031	.604
I can do better than my teammates	-.028	.779
The others can't do as well as me	-.153	.768
Others mess up and I don't	-.154	.685
I have the fastest time	.257	.723
I'm the best	.111	.735
Eigenvalue	3.45	3.10
Pct. of variance	26.5%	23.9%

mined by calculating Cronbach's coefficient alpha (Cronbach, 1951). Both task orientation ($\alpha=.79$) and ego orientation ($\alpha=.81$) measures demonstrated acceptable internal consistency in the context of elite competitive sport.

Factor Analysis of the Beliefs About the Causes of Success

Principal-components factor analyses (varimax and oblique rotations) were performed on the skiers' responses to the 21 items reflecting perceived causes of success in skiing. A factor weight of .40 was deemed necessary for an item to be considered to have loaded on a particular factor. Both factor analyses produced similar solutions. As can be seen in Table 2, four interpretable factors emerged that were aligned with previous work (Duda & Nicholls, 1992): effort, external factors, illegal advantage, and ability.

Items reflecting the importance of training, working hard, and enjoying skill development to skiing success constituted *effort*. Items concerned with the relevance of impressing the coach, proper equipment, and other external variables

Table 2
Factor Analysis (varimax rotation)
of the Perceived Causes of Success in Skiing Items

	Effort	External factors	Illegal advantage drugs	Ability
<i>Athletes succeed if they . . .</i>				
Like improving	.865			
Train hard	.768			
Like to practice	.766			
Work really hard	.731			
Always do their best	.652			
Like to learn new skills/techniques	.600			
Compete fairly	.465			
Know how to impress the coach		.788		
Get the lucky breaks		.723		
Know how to make themselves look better than they are		.710		
Pretend they like the coaching staff		.672		
Have the right equipment		.538		
Do blood doping			.862	
Know how to cheat			.854	
Use performance-enhancing drugs			.831	
Try things they can't do				-.657
Stick to skills or events they are good at				.546
Are better athletes than the others				.477
Are better than others in tough competition				.406
Eigenvalue	4.91	3.82	2.01	1.09
Pct. of variance	23.4	18.2	9.6	5.1

loaded on *external factors*. The third factor, *illegal advantage*, comprised those items stating that skiing success stems from blood doping, ingestion of performance-enhancing drugs, and breaking the rules. Items indicating that superior athletic ability and the avoidance of challenges (as reflected in the negative loading for the item “try things they can’t do” and positive loading for the item “stick to skills or events they are good at”) lead to success in skiing loaded on *ability*.

The internal consistencies of the four belief subscales were calculated, and although not exceedingly high, the observed Cronbach’s coefficient alphas were within the acceptable range: .76, .73, .64, and .60 for effort, external factors, illegal advantage, and ability, respectively. A composite scale score was calculated for each belief dimension.

The Relationship of Beliefs About the Causes of Success to Goal Orientations

Simple correlations were calculated to determine the relationship between goal orientations and the perceived beliefs about the causes of skiing success. As can be seen in Table 3, elite skiers who scored high in ego orientation were more likely to perceive that an illegal advantage, ability, and external factors are important means to skiing success. In contrast, skiers who scored high in task orientation were more likely to believe that success stems from high effort. Task orientation was also found to be positively related to the belief that ability leads to accomplishment in skiing.

To determine whether conceptually coherent goal/belief dimensions would emerge in the context of elite skiing, a factor analysis was conducted on the two goal orientation and four belief scale scores. As shown in Table 4, two factors emerged with an eigenvalue greater than 1.00. The first dimension was defined by ego orientation and the beliefs that skiing success is a result of illegal means, external factors, and superior ability. Task orientation and the beliefs that success in skiing stems from hard work and ability defined the second dimension. These two dimensions were found to be independent ($r=.09, p>.05$).

Discussion

Critical to contemporary goal perspective theories of achievement motivation is the assumption that there are individual differences in the tendency to emphasize task- and/or ego-involved goals in achievement-related contexts. The TEOSQ was developed to measure this proneness for task and ego involvement specific to the athletic setting. Evidence for the validity and reliability of the TEOSQ has already been found among young sport participants (Duda, 1989a; Duda et al., 1991; Hom et al., 1992; White & Duda, in press). The present results indicate that the two-factor structure of the TEOSQ is stable and that the subscales are internally reliable when the instrument is employed to assess dispositional goal perspectives among elite individual-sport athletes. Because preliminary research suggests that differences in goal perspectives predict variations in performance and achievement-related cognitions in the sport domain, the TEOSQ should be a valuable measure for future work on motivation among highly skilled athletes.

The present findings also provide support for the predictive validity of the TEOSQ. Aligned with the tenets of goal perspective theories and previous

Table 3
Simple Correlations Between the Goal Orientation Subscales and Beliefs About the Causes of Success

Beliefs	Task orientation	Ego orientation
Effort	.43***	.02
External factors	-.16	.21*
Illegal advantage	-.07	.30***
Ability	.17*	.27**

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 4
Factor Analysis of Goal Orientation and Beliefs About the Causes of Success Subscales

	Ego goal/belief dimension	Task goal/belief dimension
Illegal advantage	.789	-.130
External factors	.701	-.095
Ability	.537	.644
Ego orientation	.664	-.111
Effort	.032	.895
Task orientation	.160	.710
Eigenvalue	1.94	1.69
Pct. of variance	32.3	28.2

classroom-based and sport research on young athletes, logically consistent relationships emerged between dispositional goal orientation scores and beliefs about the causes of success among intercollegiate skiers. Hard work and practice were viewed as a means to skiing success only among athletes who scored high in task orientation. The belief that training and the desire to improve and do one's best help foster success was not shared by the skiers who were highly ego oriented. They were more likely than high task-oriented skiers to believe that taking an illegal advantage, possessing and ensuring that one demonstrates athletic ability, and external variables result in skiing success.

The major difference between the present results and past work on students or nonelite sport participants is that high-level skiers who scored high in task orientation also reported that ability (and the selection of challenges that can be performed successfully) is related to achievement in their sport. Given that the subjects in this study were accomplished performers, it seems realistic to perceive that one must be physically (and, perhaps, strategically, in terms of challenge selection) competent *and* willing to put in the effort if one has any hope of being

successful at this level of sport competition. That is, it is doubtful that effort alone would result in accomplishment at the higher echelons of athletic participation.

To further explore the observed simple correlations between goal orientations and beliefs about success, factor analyses of the two TEOSQ and four belief subscales were conducted. Two orthogonal goal orientation/belief dimensions, or "theories of success" (Nicholls, 1989), in competitive skiing were revealed. In general, these findings indicate that there are at least two divergent ways of interpreting high-level competitive sport.

Drawing from the goal perspective literature, the task-oriented conception of skiing success should promote maximal motivation and sustained involvement in the sport. Elite skiers with a strong task orientation realized that one needs skill and ability to get ahead in competitive skiing, but they also were cognizant of the influential role of hard work and practice.

In contrast, the ego-oriented theory of success (in which more uncontrollable elements such as ability and external factors, not exerted effort, were deemed critical) might present motivational problems in the long term for elite athletes. This would especially be true for those intercollegiate athletes who doubt their competence. Because putting in extra practice time and/or focusing on doing one's best do not seem viable options for success, ego-oriented skiers who have questions about their ability appear to have no positive and adaptive alternatives under their control. Further, because the ego-oriented goal/belief dimension reflected the perception that illegal and potentially harmful tactics result in sport success (e.g., taking performance-enhancing substances, cheating), this motivational orientation should be questioned on the basis of health-related and ethical issues.

As variations in the endorsement of a task- versus ego-oriented theory of success have been linked to differential levels of interest in and enjoyment of sport (Duda et al., in press), the present results hold important implications for sport psychology consultants. First, in the interest of fostering motivation among elite competitors, we would recommend that the consultant attempt to identify the personal theory of sport achievement maintained by each individual athlete. How does the athlete define success and judge his or her level of demonstrated competence? What are his or her corresponding views concerning the determinants of achievement? Second, it would seem productive for the sport psychology consultant to reinforce adaptive views about what causes success and challenge irrational and/or motivationally undesirable beliefs held by the athlete. In terms of the components of individual differences in theories of success, Nicholls' (1989) work suggests that beliefs about achievement are more malleable than goal orientations.

Future Directions

The present research needs to be replicated among high-level athletes in other individual sports and in team sports. A more intriguing direction for future studies entails the determination of the link between sports participants' theories of success and the occurrence of motivational difficulties over the course of athletic competition. Nicholls (1989) argued that such theories of achievement are fundamental individual differences that relate to variability in motivated behavior and color the meaning of one's achievement-related experiences. From an applied perspective, another interesting question for future research concerns the impact of the prevailing situation on an athlete's goal orientations and views about what

leads to success (Ames & Archer, 1988; Seifriz, Duda, & Chi, 1992; Walling, Duda, & Crawford, 1992). Does the motivational climate created by the coaching staff influence athletes' goal perspectives and views about achievement? If so, the stage is set for subsequent intervention that attempts to create a situational goal structure conducive to more adaptive theories of success.

Conclusion

Based on the present investigation, the independent goal perspectives of task and ego exist among elite sport competitors. Further, there is now evidence for the validity and reliability of the TEOSQ when employed for a high level of sport competition. Finally, the present findings indicate that the meaning of intercollegiate skiing varied in accordance to the goal perspective of the athlete.

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